Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Wood Graining

It is our recollection that you had an advertisement in your magazine some time ago for the Champlain Corp., who manufacture printing and transfer plates for use in the finishing industry. We are interested in obtaining their address and if you can give it to us we will appreciate it. We believe it is somewhere in New Jersey.

It is the Chambon Corp., Garfield, N. J. Their ads appeared in Sept. and Oct. issues of INDUSTRIAL FINISHING.—ED.

Wants Coating to Stay Tacky

For a number of years I have enjoyed reading INDUSTRIAL FINISHING and have received a number of very good ideas from it.

I recently read an article, which I have since been unable to locate, in which you discussed the preparation of a glue that still retained a little tackiness. My recollection is that it was made of flake glue with a little glycerine, but of this I am not positive.

However, what I especially desire is a material similar to that used on some games which I saw in several department stores. This is a game called "Sticko." It had a bull's-eye on a piece of cardboard and was covered with some sort of adhesive so that when coins or other discs were thrown at it they would stick to the material, but at the same time they could be easily removed. I would appreciate any information that you could give me as to how this material is made or where it might be procured.—D. X. Co.

We do not recall of having published anything about such an adhesive—except possibly plastic sound deadener. You might try rubber cement. Has any reader a suggestion on this?—ED.

"Minwax"

We are interested in obtaining the post office address of the Minwax Co., manufacturer of penetrating preservative. The use of this material is specified by an architect in connection with materials we are furnishing for a building project. . . . Your cooperation in getting this information to us would be very much appreciated.—R. C. Corp. (Cabinet Work; Furniture).

The address is 11 W. 42nd St., New York, N. Y.—ED.

Articles Welcome

I wonder if you would be interested in an article or series of articles on "Finishing Wood Handles" with lacquer? I have finished handles for many years and would describe each operation in detail, telling how to dip undercoats, fill, etc. I would include many fancy jobs such as mottling,

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DU BAR BLEACH—The closest to perfection and the most fool proof. If you have bleaching problems we GUARANTEE DuBar will solve them.

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colofuse, imitations of mahogany, burnt handles, marbleizing finish and pearl essence. Also, I would tell how to eliminate blushing, blisters, pinholes and the like—in fact, everything about handle finishing.—R. F. T.

Yes, indeed, we are always eager to obtain informative articles from practical experienced men—on subjects dealing with product finishing. —ED.

To Seal Mahogany Acid Stain

We have a problem of painting over acid mahogany stain to stop it from bleeding through. We have tried aluminum but this does not stop it. Some time ago we noticed that the finishers in a Kresge Dollar Store used a liquid which smelled like lacquer. They applied this over the surface and then painted on top of it, and the job has held up all right. The question is, can you give us any light on this subject? We are in need of this material at once.—G. Mfg. Co. (Commercial Furniture).

We understand that certain makes of lacquer sealer are effective over mahogany acid stain, but not over mahogany oil stain. It is extremely difficult to seal mahogany oil stain so it will not bleed through a white or light tinted finish coating.—ED.

Porcelain Repair

Could you please give us the names of various companies who supply a porcelain patch, and oblige.—H. J. & S. (Commercial Refrigerators).

A manufacturer of shellac sticks and lacquer sticks, advertising every other month in INDUSTRIAL FINISHING (page 64, this issue) has a material for repairing damaged places in porcelain finishes. The company's name and address is being sent to you. —ED.

Solvent Recovery

In January, 1939, issue of INDUSTRIAL FINISHING, we noticed your article entitled "Real Solvent Recovery Effects New Economies," on page 87. This matter is of interest to us and we would appreciate very much any additional information that you can supply leading to the actual recovering of dirty thinners. If you can give us the names of one or two concerns located nearest to our vicinity

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Type BU Airbrush with Snaplock Cup — speeds production — produces that desired finish.

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Paasche Airbrush Co.
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Most modern and complete AIRFINISHING LINE — automatically and manually operated.

(Pennsylvania) it will be very much appreciated.—S. L. Co.

A solvent recovery is advertised every other month in INDUSTRIAL FINISHING, see Feb. 1939 issue, page 80.—ED.

Rotary Dipping

We have been advised that you recently published something about a machine for the rotary dipping of lacquer material. We would appreciate your sending us a clipping of this article and also one of your magazines, advising rates for yearly subscriptions, etc.—V. H. Co. (Furniture Trimmings).

We are wondering whether you mean whirling machines (dipping and then rotating to throw off the excess material) or roller coating machines wherein the material is spread over flat sheets by rollers. We are sending you names of manufacturers of both types of machines. —ED.

They Like It

Your January issue is so good that the writer would appreciate an extra copy for his permanent reference files. Our regular copy is circulated through our works to a number of individuals, and is seldom available for reference.—E. L. Corp.

Marbleized Finishing

May I be favored with a reprint of the 2-part article on "Marbleized Finishing," published in the October 1938 and December 1938 issues of INDUSTRIAL FINISHING?—R. K. (Industrial Lacquers, Enamels, Synthetics).

Copies have been sent.—ED.

Flock Finishing

If I am not mistaken I noticed an article in INDUSTRIAL FINISHING a month or so ago relative to the use of flock in finishing. I intended saving that issue but it seems to have gotten away from me. I am wondering if you have another copy, or could tell me where to get the issue which contained this article.—T. Eng. & Mfg. Co. (Water Systems).

The article appeared in November

(Continued on page 63)

"Lastability"

"Lastability" is a word that may not be found in the dictionary.

Perhaps it means "good to the finish!"

Anyway it expresses one of the outstanding qualities of

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PRODUCTION *Finishing*

BY EDWIN M. GORDON

Spraying the adhesive

BRIEFLY, flock is made from silk, wool, cotton, and rayon fibers. It is available in many colors and tints, and in almost any length up to ½-in. However, fibers from 1/64 to ⅛-in. fulfill most of the requirements of flock users at the present time.

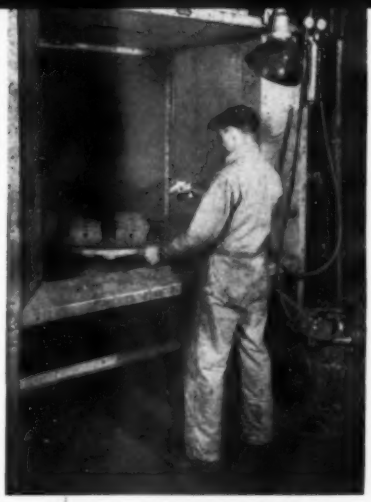
After first coating the object with a suitable adhesive, the flock is sprayed onto the surface, while tacky, by flock spray equipment designed especially for it. A smooth soft velvet-like surface results, and many interesting and novel effects are obtained. In addition, such a coating is durable, inexpensive and very attractive. Among those that come to mind at once might be listed the following objects that have been successfully finished with flocks: toys, rubber bulbs, balls, animals, card table covers, jewelry boxes (wood or metal), auto radio cabinets, artificial leather, celluloid articles, signs and window displays, suitcase linings, mirror backings, statuettes, telephone and lamp bases, gift boxes, violin cases, drawing instrument cases, and automobile rugs, trunks, glove boxes and doors. In Mexico one manufacturer coats shoe heels, purses, shoes, hats, toys, and dresser drawers. In France some automobile manufacturers spray flock on the interiors of auto bodies for trim in place of the customary cloth.

These are but a few of the many hundred possible uses for flock. Manufacturers of flock and manufacturers of equipment for applying it feel that the surface of such possibilities has barely been scratched.

In striving to produce a certain color on an article, the adhesive must be dull so that it will not shine through; and it must be the same color as the flock. However, the large variety of colors available can be increased still more by using binders of a different color and by mixing divers colored flocks. In an effort to obtain something different in effect, one novelty manufacturer mixed together the remaining portions from five or six different flock containers

with Flock

Illustrations from photographs loaned through courtesy of The DeVilbiss Co.



Spraying the flock

and obtained a very striking appearance. Later the proportions were duplicated and the new color was added to his production line.

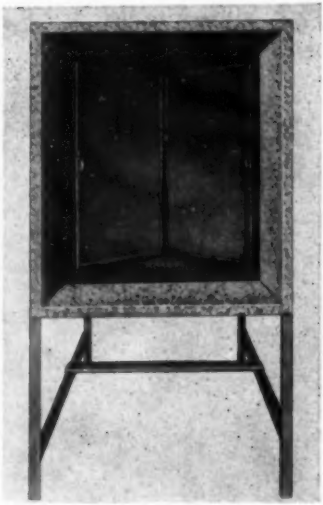
Usually the manufacturer of spray equipment for the application of flock makes it available in at least two sizes. The small size consists of a special flock spray gun with a 1-qt. or 2-qt. container attached to the gun body. This is designed mainly for laboratory use and for small production work involving frequent changes of color. The large size production equipment consists of a special spray gun connected by an air and material hose to a large separate container.

Choosing the Proper Type of Equipment

Manufacturers who are already equipped for spray painting require little additional equipment to apply flock in a small way. The cup-type gun adapts itself ideally for small quantity flock applications. A flock spray booth is desirable for two reasons, one to confine the stray fibers within a certain area, and the other to reclaim the portion which does not adhere to the surface. Since only about one-fourth of the quantity sprayed actually sticks to the adhesive, the reclaiming feature is an important one from an economy standpoint. Adhesive and flock should never be sprayed in the same booth.

The cup-type flock spray gun consists of a one-piece cast aluminum-alloy body and handle, and an aluminum 1-qt. cup or glass 2-qt. jar. The body of the gun is provided with two air adjusting valves, a thumb button air control valve, and a special air cap. The air hose is attached to the air inlet nipple in the bottom of the gun handle.

One of the air adjustments is located on top of the body near the thumb button, and the other is on the side of the upper portion of the handle. The valve on top controls air to the bent brass tube agitator. This tube is so bent that it gives a swirling motion to the flock in the cup, suspends it in a



Flock spray booth.

current of air and forces it out through the air cap. The air adjusting valve, on the side of the handle, serves to regulate and control the main air line pressure to the gun.

No air adjusting valve for the air cap is needed with the new cup-type flock gun. This air cap is designed with a slot in the inner rim so that in one position a fan spray results, and by giving it a half turn a round spray is produced.

Adjusting and Operating the Spray Gun

There is no cut-and-dried rule to go by to adjust the flock gun preparatory to spraying. Each material and the results desired will govern largely the amount of flock to be delivered and the pressure or volume of air to be used. In general, however, it might be said that first, all adjustments should be closed.

Press the thumb button and open the main line air adjustment from one-third to one-half a turn. This determines the volume of air that will be used. Next, open the air adjustment to the agitator tube, one-third to one-half turn (still holding the thumb button down). This determines how much flock will be sprayed.

Too much air or too much flock may cause the gun to clog, therefore a certain amount of experimentation will be necessary at first. Changes in type or quantity of flock may necessitate slight adjustments occasionally, but these are arrived at easily and soon become almost second nature with the operator.

Booths; Guns; Hose

Flock spray booths are available in sizes from 3 to 6-ft. wide. These booths are of the leg type, and their main features are the reclaiming screens and the collecting drawers at the rear. These

Hopper-type flock container.

booths, like the one illustrated, use a special cloth that is particularly non-resistant to air yet it has great collection properties. In addition, the finish of the cloth is such that slight tap on the screen will cause the accumulated flock to drop to the reclaiming chamber of the booth.

Those manufacturers who are not already equipped with paint spraying equipment will need, in addition to the flock equipment just mentioned, an air compressor, a transformer (air cleaner and regulator combined), paint spray gun, and another spray booth for the adhesive spraying operation.

Flock application in production finishing, at almost any speed, is now possible with modern equipment. This production type of equipment consists of a gun, air and material hose, and a separate container for the flock, usually equivalent to 10 to 30 gallons capacity.

The separate container type of flock gun is similar in outward appearance to a paint spray gun, but the working parts are entirely different. In fact, the adjustments of the gun are actually made at the air valve on the flock container. When these are once made, very little if any alteration is necessary as long as the same type of flock is sprayed. However, changes in flock, just like paints, may require a slight change in gun adjustment.

Flock separate-container gun.

Flock cup gun.

The air hose is standard, but the flock hose is rather special with a wire running the length of it and grounded to the container which, in turn, is grounded to the transformer and thence to the piping. Flock passing through any hose tends to create the same static condition as sliding leather-soled shoes over the parlor rug in a dry winter atmosphere.

Containers from Which Flock Is Sprayed

The 10-gallon pressure-feed type of flock tank is recommended in a production line of small pieces where speed of operation is required, yet where large quantities of flock are not applied in a short period of time. While this type of flock container can supply an ample quantity of flock, there is the one disadvantage of having to stop spraying for a few minutes when it comes time to replenish the flock in the tank.

To overcome this objection, for production lines requiring continuous operation, the gravity-feed hopper-type tank was designed. This container was developed for applying flock rapidly, uniformly and continuously.

This type of tank can be filled while in operation, and it delivers the same amount of material to the gun, whether full or practically empty. In fact, it has actually formed the bottom of a flock

Hood type respirator for operator.

spray booth so that the flock from the reclaiming screen fell directly into the hopper and was recirculated over and over again. The only attention necessary was occasional additions of material. The article being sprayed was placed on a large mesh screen resting over the hopper.

Principle of Operation

The principle of operation of the tank is very ingenious. An agitator driven by a geared-head explosion-proof motor at approximately 60-r.p.m. delivers the flock into a small chamber, where a stream of air forces it through the hose to the spray gun.

This agitator is made up of a 6-sided casting with six flat spring paddles projecting horizontally from each of the sides. This casting also has rods countersunk in the top that follow, vertically, the contour of the container. These rods loosen and work the flock downward and, as each paddle passes the opening in the side of the bottom casting, a quantity of flock is pushed through, like water emptying from an old-fashioned mill wheel.

The portion of the container directly below the agitator is enlarged to care for stray nuts, bolts, tacks and other objects which come off the product to be finished and find their way into the hopper. This bottom can then be removed periodically and the foreign particles emptied.

When each discharge of flock enters the chamber it is met by a stream of air and blown through the flock hose to the gun. Through a piston arrangement in a portion of this chamber, the jet of air stops when the trigger of the gun is released by the operator. In like manner, when the jet of air stops, very little if any flock is delivered through the opening, even though the agitator continues to turn. Thus the operator can move from one job to another without fear of clogging his gun or hose, or of getting an extra heavy supply of flock when next the gun is operated. It is suggested, however, that during prolonged periods of inactivity the motor be shut off.

An additional advantage of the mechanically-agitated tank over the air-agitated type is the com-

plete absence of the moisture evil through the elimination of the large volume of air necessary in that method.

One other item of equipment might be described in closing—a hood-type respirator. For extra vision this respirator hood is now available in a fire resistant material similar to cellophane, called pliofilm. The air is taken from the air line and enters the back of the hood. Because the hood is fastened by a draw string around the operator's neck, all of the excess air, as well as the exhaled air, is forced out of the opening in front of the eyes. This outward passage of air prevents any dust or flock particles from entering. In addition, because of its roominess, the operator can wear glasses if he so desires.

Air-Conditioner Finish

THE finish on the metal cabinets of the Ad-Lee "Health Air" unit conditioners, for use in homes and offices, is both durable and attractive. It is applied by a finishing concern in Chicago . . . . said to be one of the finest equipped finishing companies in the industry. According to The Ad-Lee Co.'s letter:

"The steel cabinets are first put through a degreasing operation to properly clean their surfaces preparatory to the finishing process. They are then air blown to remove any dust or dirt. Then they are given a prime coat of gray sealer which is baked at 225°F. for one hour. No intermediate coat is applied. The finishing coat consists of an extra heavy spraying of gray wrinkle enamel, which is also baked at 225°F. for one hour."

Alrose Chemical Moves to New Location

The manufacturing plant and laboratories of the Alrose Chemical Co. and Mark Weisberg Laboratories have recently moved from their former Providence, R. I., locations, 80 Clifford St. and 92 Printery St., to a new, enlarged factory at 180 Mill St., Cranston, R. I. The new plant, off Park Ave., has 40,000-sq.ft. of working space, with laboratories to accommodate 8 chemists.

The John P. Bonnett & Son Company, formerly owned by Mark Weisberg Laboratories, has been liquidated. Its operations in the electroplating of jewelry and novelties in precious metals have been discontinued in order that increased emphasis may be given by Mark Weisberg Laboratories to research and the development of new specialties for the metal and textile trades. Development of several new finishes is contemplated . . . . also improvements in all methods of electroplating so that the demands for new styles and colors may be met more satisfactorily by manufacturing jewelers.

R. J. Snelling Joins Staff of Watson-Standard Co.

The Watson-Standard Co., Pittsburgh, Pa., announces appointment of Mr. R. J. Snelling as a member of their staff. Mr. Snelling has had several years' experience as chief

R. J. Snelling, an experienced chemist, has joined the Watson-Standard Company at Pittsburgh, Pa.

chemist and technical director with well-known manufacturers of industrial finishing materials.

According to the announcement it was under Mr. Snelling's direction that the first flexible rubber coating was designed which could be applied to either vulcanized or unvulcanized rubber compound. Later this work was carried on into the designing of automatic machines for coating balls, fabrics and rubberized products.

FOR METAL PRODUCTS, SHALL WE CONSIDER

Quick-Bake Synthetics?

A NUMBER of executives, works managers, superintendents, engineers, purchasing agents and foremen are asking: "Should we change to a quick-bake synthetic?"

Besides being timely this inquiry is also logical, especially in the light of recent developments. We are hearing and reading more about quick-baking synthetics (called by various new trade names) today. They are not all new, although some of the names are new. Some of these materials have been on the market and used for years—in isolated cases. More recently some of the progressive manufacturers of finishing materials have spent considerable time and money in research work, and as a result they have made certain quick-bake synthetics more practical in both economy and ease of application.

BY CHAS. W. HARDY
Consulting Industrial Engineer

Recently I was consulted for advice regarding the practicability of using synthetic bake finishes. Three large concerns wanted an engineer's answer to this perplexing question. After making the three surveys, each of which involved careful study and various tests, I am convinced that, for many products, this type of material offers unusual merits in application, quality, permanency, resistance and economy. I believe it is safe to assume that the new synthetics will, in many cases, eventually supersede some of the old type lacquers.

Remarkable strides have been made by some manufacturers of paints, varnishes and lacquers during the last few years. They have learned how to produce good synthetic finishes that are economical and easy to apply—finishes that will stand the various quality tests.

Probably the chief reason why more of these synthetic finishing materials are not more extensively used as yet, is because the majority of prospective users lack specific information about them. Another reason is the fact that a good baking oven is required.

The lack-of-oven excuse is a poor one and should be broken down easily. For example, I have in mind a metal-novelty concern that changed to synthetic bake finishes, purchased an oven, and within two months paid for it from savings made in materials and labor. Since this change was made the company's products are, in many cases, shipped one hour after they are finished. Previously, when using an air-drying material, they had to allow at least eight hours for the finish to dry thoroughly for handling and packing. Their only regret now

M&W INDUSTRIAL FINISHES

When Adhesion Is A Problem Use *M & W DYKAST FINISHES*

● If you are having trouble finishing one of those "difficult-to-stick-to" metals, we suggest you try M&W Dykast Finishes.

These finishes were originally developed in our laboratory for die castings. But our customers discovered their excellent adhesive properties for other "difficult" surfaces. They are tough, durable, and flexible.

M&W DYKAST LACQUER-ENAMELS are supplied in gloss and eggshell sheens, in white, black, or any desired color . . . cover well with one sprayed or dipped coat . . . air-drying.

M&W DYKAST CLEAR LACQUERS can be applied clear and are also suitable for use with bronze powders. By coloring them with transparent "Platelustre" colors, the effect of various electro-plated coatings (copper, brass, bronze, etc.) can be reproduced.

AN M&W FINISHING ENGINEER WILL HELP YOU SOLVE YOUR FINISHING PROBLEMS

Maas and Waldstein Co. Newark N.J.

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Established 1876 — Producers of Lacquers and other Industrial Finishing Materials

is that they were not induced to make this change a year ago. In this case the buyer contacted the seller. In other words, he persuaded the supplier to sell him—hard to believe in these days of super salesmanship.

That Matter of Ovens

For some unknown reason modern oven equipment seems to be misunderstood and looked upon as expensive, massive and complicated—and here's the main reason why certain prospective customers hesitate to begin using the quick-bake finishing materials. The inferiority complexes can be overcome by intelligent sales promotion. Good ovens can be obtained at reasonable prices. A number of concerns specialize in the design and manufacture of this equipment. They have had years of experience in the design, manufacture, installation and operation of ovens for many different purposes.

Some of the factors to consider when contemplating the installation of an oven are: 1) Baking time—minimum time and minimum floor space; 2) baking heat — controlled temperature; uniform distribution; 3) fuel — the most economical and satisfactory, considering various conditions; 4) the final finish—evenly cured; clean; ready for use or shipping when baked.

Specifications can be worked out for an oven of the right size and type, with the temperature and baking time properly controlled .... with the temperature automatically adjusted for a specified maximum and minimum to insure a uniform bake on all jobs; using the right fuel for furnishing heat and having the best insulation for maximum retention of heat.

Leading oven manufacturers understand these problems and know their solution from years of experience. They have highly trained engineers who are competent to solve any special problems.

Economy and Production

In some cases an oven now in service for the accelerated drying of an air-dry finish may be used by increasing the temperature or by changing the method of heating. For example, take the case of a manufacturer of metal frames for ladies' hand bags. An investigation of this company's problem disclosed that the only change necessary was to replace the old steam coils with a series of electric strip heaters. Three banks of 4-kw. electric heaters were installed and thermostatically controlled. This furnished the necessary heat under perfect control. The cost of making the changes was less than $100 and the management was well pleased with the results. In fact they declare that due to the lower labor and material costs their expenditure was paid for in less than one month.

The possibilities of automatic dipping and drying equipment should be investigated in connection with the bake finishing of small parts on a production basis. It may be possible to do the dipping and drying automatically in one cycle. This will cut down the labor cost (minimum handling) and insure uniformity in the application and baking of the finish.

According to an authority on modern finishing material formulas, the basis of the majority of

Yet One Sells Twice As Fast!

It's easy to see the reason. The product finished with Damaskene—the Original Damaskene Wrinkle Finish—has an appeal that's all its own. It's *smarter*—for Damaskene reproduces the true beauty of the costly damask from which it was patterned—years ago. It's more durable—because Damaskene is "engineered" to meet each specific product. Not only "engineered" in our plant but "engineered" by our technical experts who come to *your* plant to study *your* requirements.

Some manufacturers have refrained from using a wrinkle finish because they felt their equipment inadequate or their experience insufficient. Hundreds of manufacturers—including many of the country's largest—have found Damaskene Wrinkle Finish, with the servicing we make available, the "finishing touch" that adds sales without adding cost. Damaskene will give *your* products the same appeal. May we prove it?

THE ORIGINAL

Damaskene

WRINKLE FINISH

Sold exclusively by Flood & Conklin Mfg. Co., Newark, N. J., and the following divisions: The Palmer-Price Co., The Bigelow Varnish Co., Newark Varnish Works.

Licensed by New Wrinkle, Inc.

a Great Product OF A GREA

THOR 7

From the beginning, BINKS Thor 7 Spray Gun has been —"The GUN Smart Finishers Have Been Waiting For!" BINKS Thor 7 Spray Gun is a symbol of the leadership of BINKS Complete Line of Spray Finishing Equipment.

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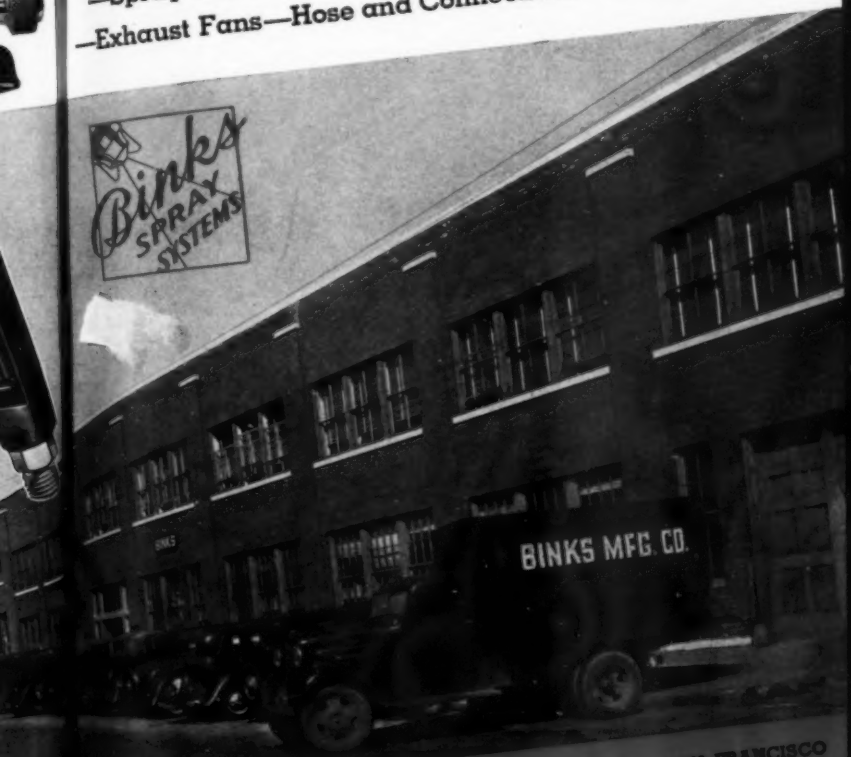

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so-called quick-bake 5 to 10-minute finishes consists essentially of a urea-formaldehyde combination, particularly in combination with glycerolphthalate type resins. The more glycerolphthalate present in the film, the longer it requires to bake.

The temperature and time required to cure or bake depends somewhat on the base of the synthetic material used. However, the following schedule is considered practical:

Base of Synthetic	Temperature in degrees F.	Time in Minutes
Urea-Formaldehyde	300	5
Glycerolphthalate	350	10

The baking time suggested here is for articles made of sheet metal. Parts made of rods, castings and forgings that are thicker in cross section will require a longer baking period on account of their extra heat absorption.

Synthetics have been used more for colors than for clear protective coatings, but there are many desirable applications for the clear finishes. The enamels are made in both dull and glossy luster. Clear finishes can be obtained in a combination of "gold" which can be shaded to imitate any gold color ranging from 10 to 24-karat, and it is amazing what an excellent color match can be obtained.

Methods of Application

Most of the baking synthetic materials can be applied by spraying, dipping or roller coating. After being baked the finish can be buffed with a soft wheel and a mild abrasive; or it can be waxed. It seems strange to me that so many manufacturers do not approve of multiple coats. However, I know of a large toilet-ware manufacturer who is applying a base coat of clear (baking it in one-third of the required time) and then spraying various colors in a recessed border, with a shield or stencil, and then baking the final finish for the required length of time. This concern is getting satisfactory results.

As to the cost of coverage per gallon and the cost of thinners needed, these factors compare favorably with those of other modern finishing materials. From some actual tests made, the rate of solvent evaporation was found to be slower than with lacquers. Accurate cost figures, kept by one user, showed that his unit cost (per 1000 pieces) was reduced 40% during the first three months of using a synthetic baked finish. Among the numerous products now being finished with this material, here are a few that come to mind: Electric washing machines, floor and bridge lamps, hand bag frames, cigarette cases, compact cases, lipstick cases, combination brush and mirror sets, toilet-ware, bottle and jar caps, ash trays, book ends and toys.

Mixing Materials

CERTAIN important features in connection with mixing pigmented materials used in finishing are sometimes overlooked, with the result that trouble of one kind or another shows up later. For instance, a man may withdraw, from a drum or barrel, a quantity of material sufficient for a given job, proceed to mix that amount with all thoroughness, and feel that everything is as it should be—but is that all?

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Actually, results are dependent upon thoroughly mixing the contents of the entire drum or barrel before any material is withdrawn—or the transfer of the entire drum contents to a tank where it may be thoroughly mixed. Failure to do this is liable to result in one batch of material being somewhat more heavily pigmented than another, and there will be a detectable difference in the shade or color given different lots of material. Later, there is the possibility that portions of two different lots, with the detectable difference mentioned, may be included in the same shipment.

Where an open-top tank is used for mixing, a power mixer, consisting of a motor with an extended propeller shaft, is sometimes clamped to the rim of the tank, the propeller shaft extending down into the material to be mixed. Usually, two propellers are mounted on the shaft to do the mixing, and they can be adjusted along the shaft to positions best suited for the job.

These propellers have blades of opposing pitch. The lower propeller lifts the material from the bottom of the tank, creating an upward current, while the top propeller thrusts the material downward. In this manner, two opposing currents are generated in the material, and a great amount of turbulence is produced at the point of meeting, with a minimum of centrifugal effect. As a result, the pigment is forced through the material more quickly and thoroughly than is possible by ordinary stirring with a paddle.

The mixer motor is of the explosion-proof type.

Mixers of the propeller type are easily cleaned, since all surfaces that come into contact with the material are easy of access, so that a suitable solvent can be sprayed directly upon them for cleaning. Where there is a great deal of changing from one material to another, or from one color to another, it is advisable to have a cup spray gun reserved especially for cleaning service.—J. E. HYLER.

DeVilbiss Hose Catalog

An illustrated catalog of 24 pages 8½x11-in., printed in black and red, contains full information on the complete line of The DeVilbiss Co.'s hose, manufactured for all requirements.

This new literature traces the product from the baled crude rubber through the DeVilbiss hose factory and testing laboratory to its various finished forms. These include spray-painting, air and fluid hose, service station air, water, gasoline and brake hose with solvent-resisting liner, welding and pneumatic tool hose and other special types designed and manufactured to meet the special demands of exacting jobs. The complete line of hose connections, valves, couplings and adapters manufactured by the company is also included.

Full specifications are listed with each type of hose illustrated, as well as much valuable information to aid in the selection of the right hose for the right job.

Copies of the new DeVilbiss Hose Catalog may be secured by writing the company in Toledo, Ohio.

1939 Chemical Formulary

The 1939 edition of The Chemical Formulary is a gold mine of valuable information — 638 pages 5½x8½-in., attractively and substantially bound to serve as a life-time reference book. Its contents include a condensed collection of new, valuable, timely, modern, practical formulas for making thousands of products in all fields of industry. This book places at your finger tips the boiled-down essence of the latest commercial methods of hundreds of chemical engineers and technicians — "a million dollars worth of knowledge for only $6.00." Copies can be obtained from INDUSTRIAL FINISHING magazine, Indianapolis, Ind.

Buffing Lacquer Finishes

BY W. C. MINGTO

A beautiful, smooth, high-gloss finish, in either a clear or color pigmented lacquer, can often be produced by buffing. A clear buffing lacquer, when skillfully buffed, will give a richness and depth of finish that cannot be easily duplicated by any other method of finishing. There are many factors to be considered in buffing a finish.

OFTEN THE TYPE of wood makes a great difference in producing a buffed finish. The best wood to use is hard maple. A buffed finish can be produced on hard maple with fewer coats of lacquer and with the least amount of buffing. Most any kind of wood can be used, but there may be some variation in the number of lacquer coats needed and the time required for buffing.

Usually it is difficult to buff an assembled article, therefore, when possible, I suggest spraying and buffing each part separately; then assemble. As with every finish, the proper care and preparation of the wood is essential. The smoother the wood is sanded, the less lacquer and buffing will be required. Sharp edges and corners should be slightly rounded. Lacquer will not build enough film thickness on sharp edges, and when the article is buffed, the buffing wheel is apt to cut through and spoil the article being finished.

The film thickness should be from .003 to .005-in. on the micrometer, and each production run should be checked regularly to see that this film thickness is maintained. Often one sprayer will obtain the desired film thickness with fewer coats than another. The usual number of coats required to produce a good job varies from two to four.

At this time it might be well to suggest a few things that will help to produce a better buffed finish. In the first place, allow as much time as possible for drying between coats. Do not buff the surface too soon after it has been sprayed. Film thickness governs the drying time but, as a rule, overnight is long enough. The second day is always better.

Where speed of production is necessary, and where overnight drying does not seem to thoroughly dry the lacquer, force-drying should be used.

I will not go into details about staining, filling or any preliminary preparation you might now be using. In most cases the materials you have been using under your gloss or flat lacquers can be used under buffing lacquers, therefore I will take up the choice of lacquer and application of lacquer coats only.

Selection of Buffing Lacquer

All clear lacquers will not buff well. The harder the lacquer used, the more perfect the finish. New high-solid-content lacquers, with the proper selection of synthetic resins and nitrocellulose, will produce sufficiently hard lacquers and at the same time make a permanently durable finish. In planning a buffed finish it is difficult to say how many coats will be necessary. There are so many different types of wood and different solid contents of lacquers that the film thickness is most important.

On a buffed finish, one way to tell when the lacquer is hard and all the solvents are gone, is to buff the article to a perfectly smooth high-gloss finish and allow it to stand for several days. If the surface does not lose any of its gloss, or again show a reproduction of the grain of the wood, the lacquers and finishing procedure are correct. Colored pigmented lacquers buff to a beautifully smooth and sanitary finish—and I believe you will find this type of finish can be produced better by building the entire film thickness with the colored lacquer, without any sealers, primers, etc. The main reason for this is that in buffing, part of the lacquer film is removed and one needs all the hiding or covering capacity possible to avoid making the lacquer transparent. Sealers are transparent. Primers are usually of a slightly different shade, and if the article should be buffed too much in one spot the finish might be spoiled by showing two colors.

Buffing Wheels; Speed

The buffing lathe should be of variable speed if possible. When a new wheel is put on, the speed, in most cases, should be about 900-r.p.m. Then, as the wheel wears down, its speed should be increased slightly in order to give the same rim speed for cutting. Muslin discs 18-in. in diameter, 64 to 68 weave, work best. The wheel is built up to thickness by putting on the spindle of the lathe one large or 18-in. disc and then one 6-in. disc or spacer, and continuing this until the wheel, squeezed up tight, will measure about 3½-in. in thickness. This is for a buffing wheel. A polishing wheel takes more spacers. Before a new wheel is used, fold a piece of coarse sandpaper over a small block of wood and hold this against the face of the wheel while it is rotating. This will remove the loose threads and help make a smooth cutting face which will work more satisfactorily. Then apply the buffing composition.

Buffing Composition

The choice of a buffing composition is important to the ease and speed of buffing. The composition should not be so greasy that the work will pull too hard on the wheel or smudge the sur-

face, nor so dry that the composition will not adhere to the surface of the wheel or fly off as dust. When the correct composition is used the muslin wheel will face up with the composition, making a very rapid cutting surface—and it should be to the advantage of the operator to keep this surface in the best of condition. Plenty of composition should be used, for it is the composition (not the muslin discs) that cuts and polishes the lacquered surface to a smooth high luster.

The wheels should rotate toward the operator and the work should be started from the bottom edge of the article, working toward and past the center. Then give a quarter turn, start at the edge again and buff edge to edge back and forth until the center of the article is reached. In this way the entire surface will be buffed and wheel marks from one direction will be removed when buffed the second time from the other direction.

Polishing Wheel

After the work has been buffed to a smooth surface and as high a polish as possible on the cutting wheel, it is then wiped over a polishing wheel, using a softer wheel and a lime composition. This operation will remove all traces of the buffing composition and raise the luster to a beautiful dry polish ready for assembling and packing. The higher the polish from the buffing wheel, the higher the polish from the polishing wheel.

The polishing wheel is made up of the same muslin discs (18-in. in diameter, 64 to 68 weave) but the wheel is packed softer. Instead of making up the wheel by placing only one 6-in. disc or spacer between every two 18-in. discs, as in the case of the buffing wheel previously described, the polishing wheel is made up by placing four 6-in. discs or spacers between every two 18-in. discs. Naturally, this produces a softer wheel. The polishing wheel should rotate faster than the buffing wheel, say 1300-r.p.m. The lime polish or composition should be used sparingly.

Operator's Technique

For personal protection against possible injury, it is a good plan for the operator to wear a pad across the front of his waist line. Pads for this purpose can be obtained from some of the manufacturers of buffing discs. The pad usually consists of 16 discs 14-in. in diameter with ½-in. spiral sewing and no hole in the center. This pad will protect the operator's clothing from wear if or when it comes in contact with the wheel; and in the event that a piece of work should catch in the wheel and fly against the operator, the pad will protect him by obsorbing most of the force of the blow.

It is always best to place the work against the body or pad and then lean against the wheel with as much pressure as possible, being careful to avoid burning the lacquer. Burning is not likely if plenty of polishing composition is used to provide a good face of composition on the wheel. It is much easier to use the weight of the body for pressure than to try to press the work against the wheel with the arms only. On small articles and edges it is usually best to just use the arms and h a n d s to hold the work against the wheel.

A Model 24K Fairchild 4-place cabin job.

Rejuvenating the Dope o

BY W. L. PLUMMER
Painting & Doping Dept.
Timm Aircraft Company

ALL GOOD THINGS must come to an end, so the saying goes. This also holds true for the best dope job that was ever turned out of an aircraft shop. By this statement I mean to say that all dope jobs, regardless of cost or quality of materials used, will deteriorate over a period of time. The useful life of a dope coating on aircraft fabric varies greatly, for it all depends upon the procedure of application and the quality of dope used. I have seen some jobs go bad in as little time as three months. On the other hand, I have seen jobs in a remarkably good condition at the end of a ten-year period.

As time elapses, the dope loses more and more of its elasticity and tends to become brittle. This transposition takes place because the dope is losing some of its plasticizers and solvents. The telltale signs of an old dope job are easily recognized. One of the best ways to test the job for this sign of old age is to thump the fabric with your finger. If it sounds dull and flat, you will know that it is lifeless. For another test, just place your thumb against the fabric and apply pressure. If under increasing pressure the dope breaks down, you will have another sure sign of lifelessness. Last but not least, an old job will usually be full of check marks. When this condition exists the last spark of life has left the dope coating.

The old way of remedying a condition of this kind was to recover the airplane, which is quite a costly process. The "rejuvenation process" is so named because it is just what you are going to

Doping the surface of a fabric-covered wing.

...on Aircraft Fabric...

do to the old dope job. In other words, rejuvenator, which is composed of slow-drying solvents and plasticizers along with other ingredients, is made soluble with the old dope and then sealed in with fresh clear dope.

Under the new set-up you have two choices for the job in question — either recover or rejuvenate. For the past two years I have found that rejuvenation jobs are steadily on the increase. One of the main reasons for this interest may be attributed to the fact that a rejuvenation job will cost 50% less than a recover job.

Clean the Surface

The first essential in preparing for rejuvenation is to have the surface you are going to work on as nearly chemically clean as possible. By a chemically clean surface, I mean a surface that is free from water break; in other words, it will support a cold water film without breaking, as on a duck's back. To obtain a surface like this, without going into some sort of an acid, presents quite a problem. However, there are a few products that will do the trick. A company advertising in this magazine makes an "Aero Wash No. 1," which is very good. Another concern makes a cleaner that is similar to it. These cleaners, which are absolutely without oil and generously used undiluted, are applied and rubbed onto the surface with soft rags. Then the surface is allowed to dry. When the cleaner is thoroughly dry it is washed off with cold water from a hose. The process is repeated on any section that may show water breaks.

Rejuvenator Treatment

When the old dope coating has been made chemically clean, the next step is to spray on as heavy a coat of rejuvenator as possible

without sagging. When this coat has become tacky, follow with a second coat. The second coat should be allowed to set for an hour or more. At the end of that time, if the fabric has not lost all its tautness a third, or in extreme cases a fourth, coat may be necessary.

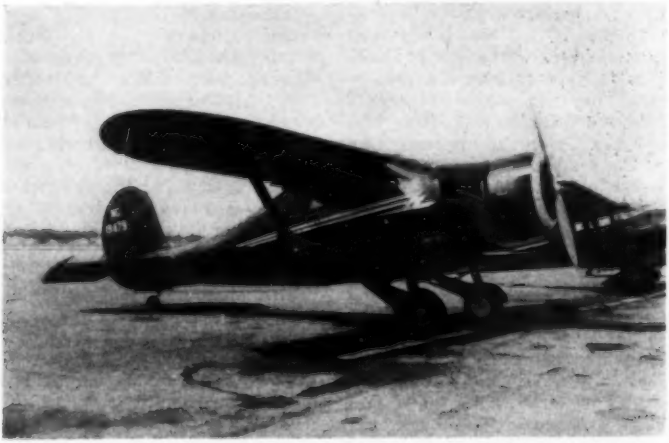
When the fabric is in a fully loosened condition, after treatment with repeated applications of rejuvenator, allow it to set until tacky. Then follow with three coats, one after the other, of clear dope. The purpose of using the three coats of clear dope is to seal the plasticizers in the job, and also to help the old dope bring the fabric back to its original tautness. The fabric should be allowed to dry for about 36 hours. Upon expiration of this time it may be sanded and refinished with pigmented dope under the usual procedure.

Note by Author: To supply some further information, which the Editor asked for, I am glad to submit the following:

This procedure of rejuvenation may sound to you like "piling on material" but such is not the case, for you are merely softening the dope and removing its brittleness. Naturally, in order to assure a good job, it is necessary to soften the old dope down to the first coat. The amount of rejuvenator used will depend upon how many coats of dope are on the job to be rejuvenated. The three coats of dope that are applied over the rejuvenator, represent practically all of the build you will obtain, because most of the rejuvenator soaks in.

Dope Solvents Wouldn't Do

Your question as to what would happen if dope solvents were sprayed on, can be answered easily. Most dope solvents, unless slowed by the use of a retarder, are very volatile. This causes rapid evaporation which, in turn,



A 1939 Beechcraft 4-place cabin job at rest in one of sunny California's airports.

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would make it almost impossible to penetrate the surface to a sufficient depth. However, if enough retarder were added to the solvents, and if you did succeed in penetrating all of your dope coats, you still wouldn't have gained anything, because when the job dried out, all of the solvents would dry out with it, leaving the old dope in the same dry lifeless condition. Your dope solvents alone will, in most cases and especially on a sanded finish, cause the surface to craze and check. This is principally due to their high rate of evaporation. In other words, the surface is being softened while the lower coats remain brittle.

When rejuvenator is used to soften the old dope, the same thing I just mentioned takes place, except that instead of drying off, it remains wet and continues working into the dope. A slight checking will probably occur at first, even with rejuvenator, but the succeeding coats of rejuvenator will cause it to lay down.

As to the sandpaper that will be necessary to use at the finish, a great deal depends upon how smooth the job was prior to rejuvenation. In most cases a medium water-sanding with No. 280 wet-or-dry sandpaper will suffice. This type of sanding is generally done by hand.

Overhead Striping

ONE of the most difficult forms of striping occurs where the striping tool must be used overhead. Whether it be a standard striping tool or a flow pencil, the feed-cup of standard gravity-type tool will not do. Instead, there must be substituted a cup of the pressure-feed type in order to do the job successfully. Really, it is better to avoid overhead striping as much as possible, if it can be arranged, by turning the work so as to convert it into a vertical job, or shift it into some other more readily accessible position. Of course, in some cases, this cannot be done.

Several different makes of striping tools are now on the market and in service for various kinds of production striping jobs.

A pressure-feed cup is also highly useful when it is desired to execute decorations in heavy colors, so that they will stand in relief. In many cases it is well to have on hand at least one striper for which a pressure cup is available. Then you have assurance that even the most difficult striping jobs can be executed with ease and dispatch.—H. E. J.

Roxaprene Bulletin

A new 4-page bulletin R2, printed in black and blue on white paper, gives interesting information and attractive illustrations relating to "Roxaprene as a speed synthetic" for metal or wood . . . . for baking or air-drying. Copies can be obtained by writing Roxalin Flexible Lacquer Co., Elizabeth, N. J.

Silk Screen Supplies

New loose-leaf catalog sheets for the Naz-Dar Process handbook have just been released. Two of these show brilliant color samples of silk screen process paints. One sheet describes a stencil cutting tool and the material known as "transparent base." Another sheet gives information about the application of film paper. Users of silk screen stencils should obtain these informative handbook sheets for present reading and future reference. They may be had from the Naz-Dar Co., 4014 N. Rockwell st., Chicago.

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Finish Checks and Cracks

BY F. R. BOYNTON

The Editor has received several inquiries, asking the cause of checking and cracking in surface coatings. This is a big subject but a few interesting points are discussed in this short article.

UNDER practical conditions surface films are subject to repeated expansion and contraction. If these forces exceed the tensile strength of the film a break will occur at the weakest point. While types and forms of breakdowns are many, I will take up those that are of special interest to the finisher.

In finishing high grade wood furniture, where two or more coats are applied, it is essential to use a good sealer; the use of a cheap inelastic sealer surely invites checking, or worse.

Cracking always starts at some weak point in the film. Pinholing is a good example of this. When alternate expansion and contraction begins, the film bursts around these tiny holes and fine checks radiate from one pinhole to another. A smooth surface, with well filled pores underneath, is essential if a lasting finish is expected. The presence of dirt and foreign matter will also cause the same trouble.

Expansion; Contraction; Film Thickness

Internal forces are developed by film shrinkage and by strains that develop between sealing and finishing coats. Since humidity and temperature variations cause expansion and contraction of the wood, it is important to seal both sides in order to exclude, as nearly as possible, the entrance of moisture.

Let us consider film thickness. It is responsible for much of the cracking and checking today, especially in the large production shops. The same finishing materials, in two different thickness coatings, will have a very different behavior. Their durability will vary and the type of film failure may be entirely changed. A thin film is apt to become too brittle and break down rapidly. Uniformly correct film thickness generally assures satisfactory surface protection and better durability at the same time, whereas an irregular film, showing or-

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March 1, 1939

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ange peel or wrinkle effects, is more likely to be due for an early breakdown. Correct air pressure, fluid regulation and viscosity of the material are important factors in spraying a more uniform film thickness on products being finished.

Solvent Retention; Direct Sunlight

Solvent retention is necessary in synthetic and nitrocellulose coatings. I have seen a lacquer film so dry and brittle it would almost crumble. Solvent retention did not mean very much to the old type coatings, but with the advent of lacquers and synthetic resins it became a real problem. The amount of solvent that can be retained in a film is considerable. Even after several months, it amounts to a considerable percentage of the weight of the film. Of course, too much retention will result in the film becoming plastic instead of elastic.

Direct sunlight or ultra violet rays have a harmful effect on surface coatings, especially if the coating has not been formulated to meet these particular requirements. Furniture in office buildings is often exposed to direct sunlight. The film of finish may become hard and b r i t t l e and crumble easily when sandpapered. Red stains may become a faded brown and brown colors may become a washed-out yellow. The film may become rough and intersected by small lines and checks, along with a loss of gloss.

In Metal Finishes, Too

In c o a t i n g metal, different problems are encountered. Mechanical film properties such as tensile strength and distensibility are important and deciding factors in the life and performance of a surface coating. Well-informed finish technicians know that the stress and elongation of a paint or enamel film varies with age and type of exposure. Unlike metal, most paint and enamel films do not completely regain their original shape after certain stresses are removed, therefore some distortion of the paint film is likely to be present after the metal goes back to its original shape.

Rust under the film is another source of failure. Starting with small pores in the film, tiny lines radiate from these and soon a considerable portion of the film is checked. Certain driers, used in excess or improperly in a finishing material, will cause surface distortion, and will result in the ultimate breakdown of the film.

A breakdown in the film usually starts at an area of tension; for example, where sags have caused a stretching of the film. Microscopic pores caused by oxidation, scratches, air pockets, impurities and foreign matter — these also may be responsible for the starting of checks.

Temperature; Humidity

If a coating is to stand much cold, it should have plenty of linseed oil to give it elasticity. In sections where there is excessive humidity, little sunshine, and considerable cold weather, phenolic resins will fortify the film against moisture and abrasive action. W h e r e temperature is moderate, and where the sunlight and humidity are what we term "average," these climatic conditions will have little or no effect

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- ✓ **Sets Up Quickly . . Insures Clean work.**

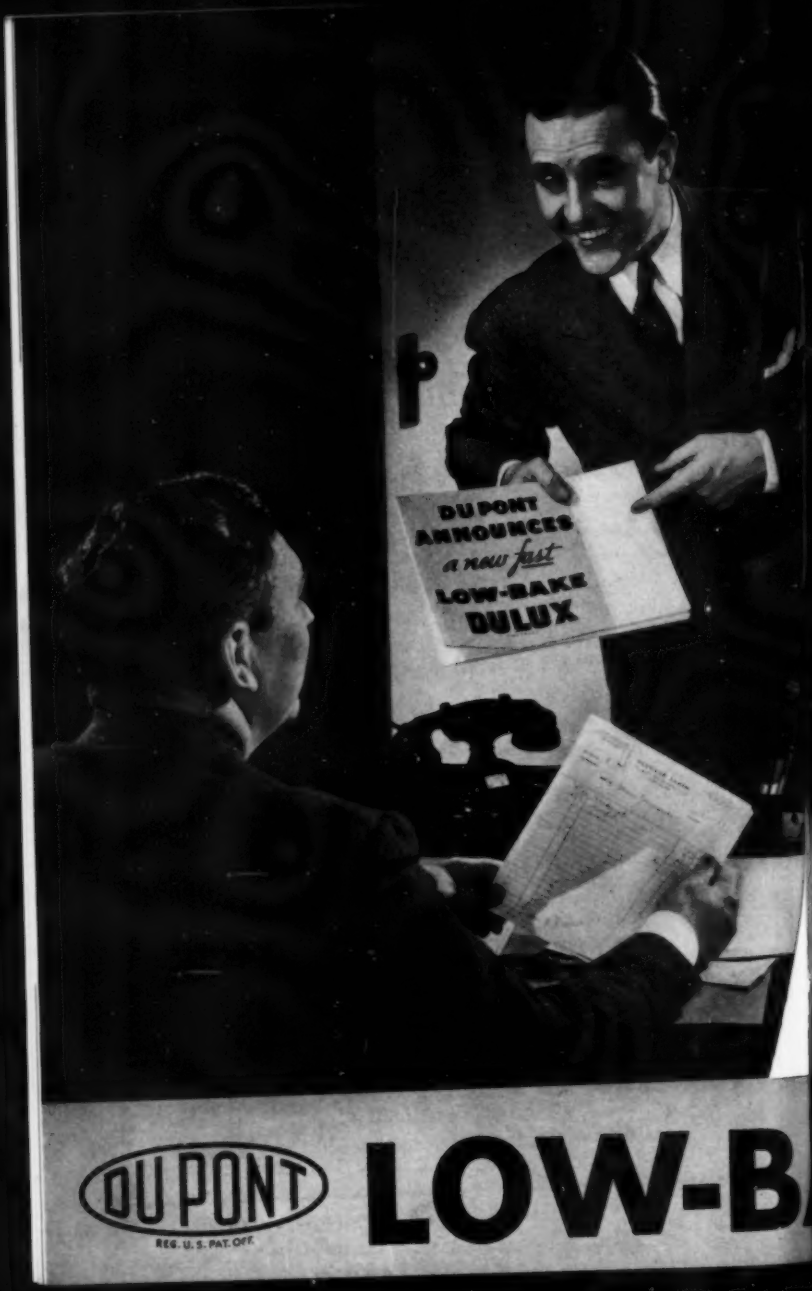
Why not check the merits of VITRA-CARLITE by trying it? Or, write to our Service Department for copy of Bulletin No. 21 fully describing VITRA-CARLITE 100% Synthetic Enamel.

HILO VARNISH CORP.

42-60 STEWART AVENUE, BROOKLYN, N. Y.

Boston Chicago

HILO


DU PONT
ANNOUNCES
a new fast
LOW-BAKE
DULUX
DU PONT
REG. U. S. PAT. OFF.
LOW-BA

LOOK, BOSS—
A HALF-HOUR AT 225°!

Du Pont announces a new, fast **LOW-BAKE DULUX**
. . . cuts baking time in half at low temperatures!

A FEW YEARS AGO, Du Pont introduced High-Bake DULUX. Last year came Short-Bake DULUX—which cut baking time in half at high temperatures.

AND NOW A NEW, FAST *LOW-BAKE* DULUX! A new Du Pont development especially for manufacturers whose ovens are only capable of temperatures between 175° and 250°F. . . . and gives you all the same outstanding qualities you have grown to expect from other types of DULUX.

With Du Pont Low-Bake DULUX, you may obtain schedules of ½ hour at 225°F. Other practical baking schedules are:

¼ hr. at 250°F. 1 hr. at 200°F. 2 hrs. at 175°F.

Du Pont Low-Bake DULUX offers manufacturers with low temperature ovens a way to double their production.

Du Pont Low-Bake DULUX has excellent gloss and build; hardness and print resistance; flexibility and flexibility retention. It is wrinkle-proof under all normal application conditions. It gives highly satisfactory hiding in one coat.

For full information about this time- and money-saving finish, write to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.

BAKE DULUX

REG. U.S. PAT. OFF.

SPEED WITH BEAUTY AND DURABILITY

You have heard much of speed lately, but little has been said for the beauty and durability of the resultant finish. You can now have both if you purchase SPEED-COTE "XN".

A tough, tenacious baking enamel, designed for bare metal adhesion that bakes at 275° Fahrenheit for fifteen minutes or 350° Fahrenheit for seven minutes to a hard, flexible, mar-proof surface. Furnished in a PURE white and many beautiful pastel, as well as solid shades, *that are moisture proof and resistant to weak alkalies and acids, fruit juices, soap, etc.*

Why employ higher heats to accomplish speed, if the fuel costs are going to offset the savings. SPEED-COTE "XN" requires only the normal heats now employed in most factories and yet *cuts the baking time down to a minimum.*

SPEED-COTE "XN" reduces to spray FIFTY percent for full covering with SYNTOL REDUCER "B", a low cost reducer that brings your cost at the gun down within the price range where many operators are paying for inferior products.

WRITE TODAY FOR YOUR FREE SAMPLE OF SPEED-COTE "XN" AND LITERATURE DESCRIBING THIS AMAZING NEW FINISH

THE SCHAEFER VARNISH COMPANY

15th and Magnolia Streets

Louisville, Kentucky

"Finish the Schaefer Way—and Save"

on the films of finishing material.

The mechanical properties of surface coatings are influenced by the degree of humidity in the atmosphere — and the type of cracking depends upon the flexibility and porousness of the film; the film strength is decreased by excessive moisture. Synthetic resins have prolonged the life of surface films under these conditions. Temperature is also an important factor in the life of a film finishing material. The durability and life of such a film depends largely upon the character of the resin present.

Off-Color Trouble

OFF-COLOR can be caused by a number of different conditions. In some cases it is noticeable where the undercoat hasn't been allowed sufficient time to dry. The result is that the finish coat softens the undercoat, allowing the pigment colors of the undercoat to float to the surface.

Sometimes this trouble will show up even though the undercoat is perfectly dry. It may be due to the fact that materials for the undercoat and finish coat were produced by different paint manufacturers. Or the thinner used to reduce the finish coat to proper viscosity may have softened the undercoat, allowing the undercoat pigment color to float to the surface.

This particular type of off-color may show up in various disguises. I have seen it appear where a retarder or slow thinner had been used. The theory is that when a finish stays in liquid form too long, it has a tendency to soften the undercoat, regardless of how long the undercoat has been allowed to set up.

Quite often the off-color is mistaken for a surface film, and attempts are made to remove it by polishing. It is useless to attempt to overcome this condition with auto polish or even rubbing compound, as it extends through the finish coat, and no amount of polishing will remove it.

The recommended procedure for remedying this type of off-color trouble is to first let the finish dry thoroughly; then apply another thin coat. If the added coat is applied too soon, the off-color may show up to some extent in the final coat.

Some finishes are what are known as "self-dissolving" or "self-lifting." In case a finish of this type is used, it will be necessary to apply a coat of sealer before putting on the final coat, in order to overcome the off-color difficulty. Conditions such as those just outlined are more likely to occur when lacquer materials are used.—H. H. GLINKE.

Tests Finishes at N. Y. Fair

A complete laboratory for testing paints is being installed in the duPont Exposition building at the New York World's Fair. Reproduced in faithful detail, it will demonstrate the devices which check every property of paints, varnishes and other finishes. These will include tests for hardness of the film, thickness of film, drying time, resistance to grease, water and moisture; covering power, chipping, flaking, bending, color and gloss.

Electroplating Bulletins

Six new and revised bulletins on electroplating have just been issued by the R. & H. Chemicals Dept. of E. I. duPont deNemours & Co. Concerns and individuals interested in this subject may write the company at Wilmington, Del.

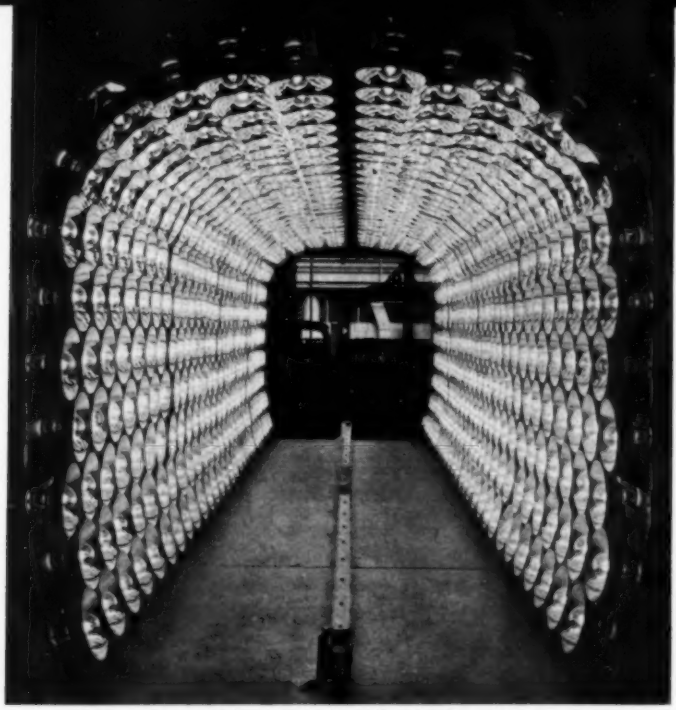


Fig. 1—Sectional drying tunnel lined with infra-red lamps and reflectors.

Infra-Red Lamps . . FOR DRYING

THE USE OF banks of electric lights in front of gold-plated or copper-plated reflectors for producing heat to bake finishes is a comparatively recent development in industry. The lamps used have been specially developed for this purpose and are called infra-red lamps. More than 10,000 of these lamps are installed in the River Rouge plant of the Ford Motor Co. which has taken out patents for the use of radiant energy for the electric drying of enameled surfaces.

The development started in 1933, shortly after the introduction of synthetic resin enamels. At first only small units were used for baking repair spots. Portable electric baking units are still used for this purpose in the Ford plant and in several other establishments. However, the infra-red lamp method of quickly

AN INSIDE JOB

That's *your* job. You build a good product . . . right from the inside out . . . and you're an expert. But. when you come to the outside . . . that's *our* job. We can help you cut finishing time, reduce finishing costs, and improve the salability of your product. We are doing it NOW for many of the best known manufacturers in the country. Perhaps it would be a good idea to get together. Write Dept. C—.

THE STANLEY CHEMICAL CO.
East Berlin, Conn.
Lacquers Synthetics Enamels Japans
A Subsidiary of THE STANLEY WORKS New Britain, Conn.

drying finishing coats has been extended to the point where drying tunnels large enough to take complete automobile bodies have been designed, built and placed in service.

The latest drying tunnel is nearly 90-ft. long and has 4,800 260-watt lamps for drying the finish on automobile bodies. At the Ford plant this type of heat is employed for drying priming coats, first coats of enamel, some finish enamel coats, and all enamel repair jobs. The illustration marked Fig. 1 shows a sectional tunnel for drying primer in 10 minutes. In Fig. 2, we have a view showing truck cabs receiving heat from banks of electric lamps mounted on portable stands which are directed against local areas of a repair finish. The illustration marked Fig. 3 shows automobile steering-wheel columns moving by conveyor between banks of infra-red lamps arranged to produce intense heat.

Fig. 2—Portable units of infra-red lamps are used to bake finish on repaired areas.

Supplementing the foregoing information which, with these photographs, was supplied through courtesy of the magazine "Electrified Industry," Chicago, Ill., Mr. H. D. Robertson, Detroit, Mich., who represents the manufacturer of infra-red electric

Fig. 3—Finished steering columns being conveyed between banks of infra-red lamps.

Neither STERILIZATION nor DEEP DRAWING can DULL or DAMAGE this BRILLIANT BLACK FINISH

Jet-cote

FOR SPRAY, DIP OR ROLLER APPLICATION TO METAL

Jet-Cote is a bright black metal coating that stays black and brilliant through all the abusive processes of fabrication . . . including deep drawing and sterilization. It can be used directly on metal without sizing. Ask for details.

TOUGH JOB HEADQUARTERS

Rx Prescription Finishes

Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

THE WATSON-STANDARD CO.

Manufacturers of

PAINTS VARNISHES INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES: PITTSBURGH, PA.
WAREHOUSES: BOSTON · BUFFALO · DETROIT

ECLIPSE
PNEUMIX

SAFE
SPARK
PROOF!

Air Operated . . . .
Variable Speeds . .
30 to 6000 R. P. M.
5-50 Lbs. Pressure

Manufactured in Several Types and Sizes
WRITE FOR NEW DATA FOLDER

ECLIPSE AIR BRUSH COMPANY
391 Park Avenue Newark, N. J.

lamps, submits this information:

"I notice in articles printed that little is said about the size of reflectors. This is very important, as just any size will not do. Reflectors should be gold plated and properly ventilated and grouped to take care of that particular product to be dried. Many manufacturers have found it difficult to get the proper apparatus set up.

"Recently an organization was formed in Detroit, known as Infra-Red Ray Devices, Inc. The engineers in charge have a complete knowledge of this work, with considerable experience back of them.

"Very high temperatures can now be obtained with Nalco carbon lamps, these temperatures running as high as 500°F."

This use of electric lamp heat for drying and baking applied films of finishing material represents just one phase of the extensive development work that has occurred in practically all types of industrial heating and baking equipment since the introduction of synthetic enamels. More companies are using bake finishes and as a result more oven equipment is being installed . . . . as explained in an editorial entitled "More Bake Finishing," published in January 1939 issue of INDUSTRIAL FINISHING.

Binks San Francisco Office Moved Into Larger Space

The San Francisco, Calif., office of Binks Mfg. Co., Chicago, Ill., has been moved from 923 Harrison St. to new and larger quarters at 778 Brannan Ave., San Francisco, Calif. Mr. E. E. Meyer, Pacific Coast Manager, reports that the new location will give him increased facilities for serving his customers and the other Binks branches on the Coast.

If COMPETITION PUTS YOU BEHIND THE 8 BALL

Many a well built product that functions perfectly, is priced right, and is actually tops in value, consistently remains a second-rater in sales . . and puts its maker behind the 8 ball as far as profits are concerned.

The missing link . . that "something" which puts the zip into sales . . is most likely *finish*, or eye-appeal.

If you have such a product, write us about it! We maintain a creative studio where such problems are analyzed and solved . . where finishes are created that are practical and sound from a cost standpoint and definitely helpful in upping sales.

There is no charge to reputable firms for this service. Let us have your problems!

ROCKFORD VARNISH COMPANY
Manufacturers of Finishing Materials
ROCKFORD • ILLINOIS

NO TAMPERING WITH QUALITY

Du Pont Wood Stain

A new wood stain is announced by the du Pont Co. Dyestuffs Division. It is designed for stains containing organic solvents which prevent raising of the grain in wood, caused by water stains. It is known as Du Pont Wood Stain Scarlet NS Concentrated. It is equal in strength and slightly more yellow in shade than Du Pont Crocein Scarlet N Extra. Excellent solubility in organic solvents is claimed, satisfactory stains being obtained with methyl or ethyl alcohol, or "WDS" Wood Stain Solvent, made by the du Pont Ammonia Department. Combinations of these, with oils such as toluol or xylol, are also permissible.

"WDS" Solvent was developed specifically for use in preparing a fast-drying, non-grain-raising, non-bleeding, high-solvency, penetrating spirit stain for wood finishing.

The "pH" of the new stain is such that it will not corrode cans in which it is stored.

Barrett Galvanizer

The Barrett Galvanizer, manufactured by Leon J. Barrett Co., Worcester, Mass., is a machine for throwing off excess molten zinc or tin from small articles that have been dipped in the hot metal to give them a galvanized or tinned protective coating. The whirling action of the machine must occur immediately after the metal has been dipped, before the metal cools, and it should be a dependable operation so as to leave the coated parts with a smooth coating of uniform thickness.

Inside the Barrett centrifugal machine is a cylindrical basket capable of being revolved at high speed and stopped almost instantly. When parts are removed from the hot kettle of molten metal they are placed in the basket and rotated rapidly inside a closed cylinder to throw off all excess hot metal.

New...

MATERIALS SUPPLIES EQUIPMENT

Illustration of Barrett Galvanizer.

These galvanizers are built in different sizes with features to suit varied requirements. Operating cycles from 40 to 240 loads per hour may be obtained, with 15 to 100-lbs. per load, depending on the type of machine used. Hourly capacity is dependent upon the speed of operating facilities and handling. The basket carrier is rugged and is arranged for quick-loading and self-cleaning.

A built-in high-torque heavy-duty motor gives a direct drive to the rotating unit which is self-contained and self-balancing. The basket carrier is mounted on top of the ball-bearing vertical motor spindle.

Cut Sealer Costs WITH DU-PROS SHELLAC

Du-Pros Strictly Pure Shellac is low in price, high in solids and reduces with alcohol. It not only costs less than most sealers, but reduces farther with a lower priced thinner. These features make Du-Pros the most economical sealer you can use under lacquer or varnish.

Du-Pros is not only economical. It produces a high grade finish. While shellac in general has been recognized as an indispensable material for generations, Du-Pros produces the finest results ever achieved. This is the result of using the finest ingredients, and extra processing by the original Day method.

Every gallon of Du-Pros Strictly Pure Shellac is freshly made when shipped, insuring good color, easy sanding and quick drying. You will find that Du-Pros spreads out smoother.

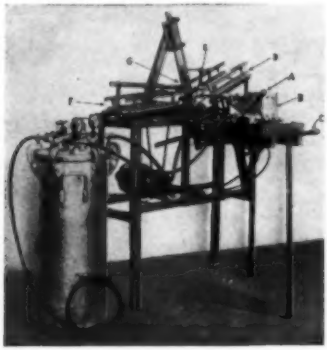
In a low cost sealer like shellac it is important to use only the best. Day's Du-Pros Strictly Pure Shellac will give you finest results with the greatest economy. Order a trial barrel today.

DAY

JAMES B. DAY & CO.
• CHICAGO

Spray Machine

The Eclipse Air Brush Co., Inc., 390 Park Ave., Newark, N. J., has developed a machine for the semi-automatic spray coating of the inside of small cylindrical objects such



Sprays insides of cans automatically.

as paper or metal cans. The cylinders feed by gravity down an adjustable slide and are released by a manually operated lever onto a rotating device. A solenoid-operated spray gun fitted with an extension nozzle is then moved forward to coat the inside, while the cylinder is being rotated. The gun is pulled back and the next cylinder comes down, pushing the finished one on its way. A 1/6-hp. electric motor operates the automatic part of the equipment. An average production of 10,000 pieces per 8-hour day can easily be maintained with this machine.

"Polydur" Enamels

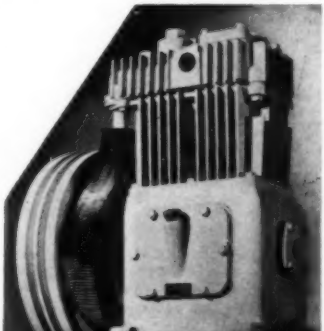
A new line of synthetic enamels, with very short baking schedules, has just been placed on the market by Maas & Waidstein Co., makers of industrial finishes, Newark, N. J. These new finishes, known as "Polydur" enamels, were developed to enable manufacturers to speed up production by reducing the time needed for finishing their products.

Polydur enamels set out of dust in a few minutes. Their baking schedules depend upon the temperature employed, but, at 325°F., they bake to a fine finish without discoloration in 15 minutes. The finish is very durable and resistant to marring, moisture and ordinary household chemicals. Polydur finishes are supplied in white and all colors, for spraying or dipping.

Air Compressor

New air compressors announced by the Quincy Compressor Co., Quincy, Ill., are distinctive examples of modern machine design—"as good looking as they are efficient." Their many important mechanical refinements include simplified construction, 12% greater radiation area on cylinders, a more thorough and more positive constant-level oiling system; totally-enclosed dust-proof crank cases and non-breakable cushioned discharge valves that make operation smoother and quieter.

When furnished for automatic start and stop operation, these com-



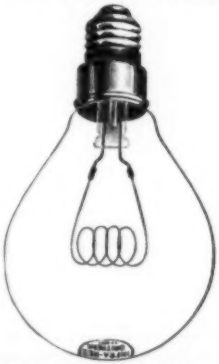
Good looking . . . . and efficient.

pressors come equipped with a loadless starting device which automatically withholds all load from the motor until it reaches full speed. This device also eliminates the need for check valves.

Sizes range from 2.8 to 30.1-cu.ft. per minute piston displacement. Nine models are available in a variety of standard and special mountings.

Infra-Red Lamps for Radiant Drying

"Dritherm" is the name under which the newly improved NALCO Infra-Red Ray Lamp will be marketed. These lamps, made by the North American Electric Lamp Co., 1014 Tyler St., St. Louis, Mo., have been especially manufactured for radiant drying and heating purposes. They represent the final development of over four years' research and



Infra-red ray electric lamp.

practical application in a number of the country's largest plants, including automobile plants, where they are used for paint baking.

Several features claimed for these lamps are: long burning life in proportion to high efficiencies obtained, uniformity of filament materials as well as placement of carbon filament within the bulb, and rugged construction to minimize breakage.

Metal Cleaner

A new metal cleaner that instantly removes stains and oxides from copper, brass, bronze and other metals, except aluminum, iron and zinc has just been announced by Rapid Electroplating Process, Inc., 1414 S. Wabash Ave., Chicago, Ill.

It is marketed as "1-second" cleaner and is reported to contain no abrasives. It cleans by chemical action only and requires no rubbing. It has a jelly-like consistency and is applied with a brush and immediately wiped off with wet rag and then dried.

The substance contains no free acid or caustic and will not etch or harm the metal in any way, even if permitted to dry on the surface.

It retards the re-forming of oxide and because it contains no abrasive, makes it useful for rendering working surfaces chemically clean without leaving any gritty residue. It also cleans crevices inaccessible to some cleaners and leaves no powdery deposit.

Ordinarily copper, brass and bronze must be regularly and laboriously polished, each operation leaving a powdery deposit in crevices and on surrounding areas. It is claimed that by use of "1-second" metal cleaner, deposits are removed and polishing need only be done very occasionally when surface becomes badly scratched or abraded.

Veco HAND-SHIELD
Applied to hands and arms BEFORE painting or greasing —keeps them CLEAN. Easily removed with MILD soap and water.
SAVES WASHING TIME SOLVENTS, MONEY
$1.50 per gal. 25c 8 oz. jar
V. E. P. CO., DETROIT

Bright Dip Brass Trouble

We have a number of brass parts to finish and have been using an acid dip (bright dip) on these parts, but since a large number of them are made of leaded brass, the results have not been satisfactory. We have tried every bright dip formula that we have ever seen. Most of these would not work at all. We have written to several concerns for information on suitable formulas for leaded brass, but with practically no results. In the end we have always gone back to a mixture of two parts of sulphuric acid, one part of nitric acid and a small amount of hydrochloric acid or salt, and about one part water when making up a new dip. This is used at 110°F. The water and the heat seem to be contrary to most formulas, but without them we get almost no action at all.

Results obtained from new batches of dip are practically the same as from old batches, and in either case they fluctuate during their use, thus making it necessary to "doctor" them. Most of the trouble is caused by the free lead in the surface of the brass showing white after dipping, but sometimes the machined surfaces turn pink, while the unmachined parts remain uncolored.

We have found that the addition of any one of the acids or water, or a combination of any of these, may restore the solution to its operation, as determined by trial, but we can find no fixed rule governing this. And sometimes the only solution is to let the dip rest over night or longer.

The bright dip method of finishing leaded brass has not only given poor results but it requires considerable preparation, which is unsatisfactory when only a small quantity of parts are to be finished. The larger parts are also subject to streaks and spots.

If you can give us any information which will help to eliminate our troubles with the bright dip, or if you can recommend any other method of finishing these parts to obtain a rich, clear color, we shall certainly be grateful to you. We might add that the shape of most of these parts is such that we doubt if they could be buffed or brushed. We do not have plating equipment. We have written one or two manufacturers of sandblast equipment to see if they could give us any help, but they did not even reply.—T. S. M. Co.

Your problem has been referred to the foreman of a concern that does extensive name-plate finishing. This foreman has had many years of experience in finishing brass by the bright dip process and his suggestions are as follows:

"Eliminate water from your bright dip solution—and leave the solution cold; it will become warm when the acids become active in their work on the brass. To speed up activity of the solution—that is, to get it started into activity for production work—place a piece of brass in it and leave it remain there for 30 minutes to an

Questions Answers

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A thoroughly practical book in five parts.
I. Period Furniture and modern styles.
II. Furniture Decoration (Antique Shading, Glazing, etc.)
III. Furniture Finishing (Woods, Finishing Room Tools, Equipment, Materials, etc.)
IV. Furniture Patching.
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A NEW
LACQUER FINISH
RESEMBLING SUEDE
ESPECIALLY RECOMMENDED
FOR DISPLAY WORK
WHERE
NO LIGHT REFLECTION
IS DESIRED.

MADE IN SEVERAL PASTEL SHADES.

WESTERN STATES LACQUER CO.
4001 East 52nd Street
MAYWOOD, CALIFORNIA

ANOTHER BULL'S EYE

Martin Varnish Co. Clicks Again with

M. V. L. SEALER **M. V. L. FINISH**

A combination of these gives the most sensational and complete finish ever offered.

Dries with the speed of Lacquer—
Feels like Varnish—
Looks like Varnish—
Builds like Varnish—

Made in: Gloss, Semi-Gloss, Hi-Sheen, Medium Flat and Flat

(Prices are comparable to Varnish)

MARTIN VARNISH CO.

900 WEST 49TH PLACE CHICAGO, ILLINOIS

hour before you are ready to begin operations. Then remove this piece of brass, and you are ready for the bright dip operation.

"The brass to be bright dipped should be perfectly clean and dry. If the parts are small, we presume that you place them in a basket so they can be easily and quickly dipped into the solution and withdrawn — the period of submersion being 30 to 60 seconds. If you do use a basket, it should be made of aluminum or nickelchrome. It should contain no iron—not even iron rivets, as this would cause red streaks in your brass work.

"Sometimes fumes from this active bright dip solution will tarnish the brightly dipped parts as they are being withdrawn, therefore it is desirable to have a hood over part of the tank, and have this hood connected to the exhaust system, so that all fumes from the working solution will be promptly drawn away.

"After dipping the brass parts in the bright dip solution, they should be immediately rinsed in cold running water. Then dip them in a solution of sodium cyanide (4-oz. to the gallon of water); then rinse in cold water; dip in hot water and dry in sawdust.

"After your bright dip solution has been used for a while it will become less active and will have to be 'pepped' up by further additions of sulphuric acid and nitric acid. The exact quantities to add will have to be determined by experimenting — if the operator doesn't know this from experience. There is no fixed rule about these additions."

WOOD LACQUERS

There are no spectacular developments in wood lacquers. There is, however, the accumulation of years of testing and steady improvement resulting in our present line of gloss and flat lacquers developed for the wood working industries.

Where the maximum dollar value in solids and smooth-flowing solvents is required; where perfected resistance to cold-checking, abrasion, moisture, printing, beverages and light are desired, we shall be more than glad to submit samples for any desired test.

Within the comparatively narrow price range for this type of lacquer, we feel we can and do supply a material unsurpassed for its specific purpose.

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue Cleveland, Ohio

According to the foreman who has given us this information, your formula for the bright dip is satisfactory except for the water you use and the fact that you heat the solution. As previously stated, he advises against the use of any water—and you do not need to heat it, as the solution itself becomes warm after it has been made active through its work on the preliminary piece of brass that was put into the solution before your operations began.

We hope this information will be of some value to you in the solution of your problem. We suggest you try it out and we would like for you to report to us about the results you get. If your results are unsatisfactory, please give us further details in connection with the work, and we will go into this matter further.—EDITOR.

Sealer Over Red Nitrate Dope

What would you recommend to be used as a sealer over an old red nitrate dope fabric surface that has to be refinished with a light colored dope?—L. R.

I suggest you try using a coat of aluminum paint or dope. You may get satisfactory results, and you may not. There is no perfect sealer for this type of work. If you try to finish with too light a color, such as a cream or a white, a bleeding of the red may penetrate the aluminum sealer. In some instances I have sprayed a light color over a bleeding red, but I regarded it more as a feat of skill than as an excellent refinishing job.

A partial list of

WALKER'S FINISHES

Fillers
Primers
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Metal Lacquers
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Maintenance Paints
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Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES
To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

Produce

OUTSTANDING

SIGNS
DISPLAYS
TOYS
NOVELTIES

with a finish totally different than can be obtained with paint or lacquer.

FLOCKING

with a spray gun is the newest and most novel way to give your products a soft, velvety finish that immediately attracts attention and "buying interest."

CLAREMONT FLOCKS

COTTON — WOOL RAYON

in brilliant colors are taking the finishing industry by storm.

Have you tried them?

Write for Samples and Prices.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The Country's Leading Manufacturers

When using a sealer over a doped fabric job, you must be certain that the sealer is as flexible as the dope. This requirement alone disposes of practically all of the good color sealers.

In applying the aluminum sealer, care should be taken to see that it is applied in the correct manner. I would say two cross coats should suffice. The aluminum should be allowed to dry for approximately 36 hours and it should be then given a light sanding. The surface is then ready for the color coats. In applying the color, the first three or four coats should be applied almost dry, and given plenty of time between coats for thorough drying. The wetness of the coats may be gradually increased, to the finish coat.

Although the above suggestion is as practical as any I know of, I still think a synthetic enamel finish would be the wisest choice on this job.—W. L. PLUMMER, Foreman, Aircraft Finishing.

Furniture Refinishing

One of our readers has written to us for information and we wonder whether you could possibly help us with her problem. Her house is completely furnished with Monterey furniture which she purchased in California and which she thinks is manufactured there. It is becoming badly chipped, but no one in her locality knows how to refinish it. We have written several times on this subject to a concern that manufactures this furniture, but have received no reply.

Have you any idea how this furniture could be refinished? If

not, could you suggest where we might obtain this information?—Readers Research Bureau of a National Magazine.

A number of manufacturers have made these suites, using several different kinds of lumber. Where the wood shows, some manufacturers have used Philippine mahogany, but where the wood is covered or hidden they have used lower priced western woods such as Oregon maple, alder, etc.

The usual method of finishing this Monterey furniture—that is on the "decorated" areas, which are of Philippine mahogany, is as follows:

Fill the wood with walnut filler. When dry, apply a coat of lukewarm glue (Le Pages preferred). Then, before the glue sets, spray a water emulsion undercoat on the parts to be decorated. Some concerns use flake white reduced with water. When the undercoat dries on the glue film, it cracks the glue and undercoat due to the fast set-up of the undercoat. This cracking can be regulated by using the glue and undercoat thick or thin. The cracking is intentional to make the surfaces look like those on the old Spanish furniture that was brought over from Spain many years ago.

After this cracked coating is dry, the glazing or decorating is done. Some concerns prefer to put on a coat of sealer before the glazing or decorating. When this is dry, they apply a flat lacquer or flat varnish over the whole surface, using as many coats as desired.

From the information I gather from your inquiry, I have an idea that the peeling and chipping you complain about is due to the fact that the glue coating was applied over a lacquer sealer, whereas it should be applied directly on the bare wood or on the wood-filled surface after the filler has dried thoroughly.

The real Monterey furniture, which some modern manufacturers are attempting to imitate, was all cracked with large irregular cracks. That's why a crackle lacquer is unsuitable for this kind of work. The idea has come from Mexican artists who have preserved the old way of doing things.—ORRIE D. MAAL.

Wall-Clock Cases

I am finishing wood wall-clock cases made of basswood. I have to hold the cost down as low as possible but I am not satisfied with the finish I am getting.

First, I stain with walnut stain; then I apply a coat of lacquer sealer, which I sand smooth. This is followed with two coats of clear satin finish lacquer, sanded between coats.

What I would like to know is, can I add a small amount of glue

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dissolved in water and add this to the stain to help act as a sealer, without causing any bad effects later? This wood is so porous I cannot stop suction by the method I am using.—F. A. D.

It seems to me that you are using an expensive, time-consuming method to finish cheap production work. I suggest the following:

First, I would omit the water stain entirely, as this opens the pores and raises the suction so the finishing material has no other course but to sink in. I would recommend using a pigment wiping stain and reduce it with boiled linseed oil and gasoline. (I suppose the cases are small enough to be dipped in a tank.) Any diversified wood or off-color pieces may be uniformed easily and quickly with lacquer shading stain, when dry. A coat of shellac or lacquer sealer, followed by a full coat of flat lacquer should produce a much better finish than you are now getting with two coats of lacquer.

A typical mixture for one gallon of filler is as follows:

Filler (paste)	4-lbs.
Linseed oil (boiled)	8-oz.
Japan drier	2-oz.
Gasoline	(enough for one gallon)

Another Finishing Schedule:

Spray the cases with non-grain-raising stain. For fast production, apply a reliable 4-hour filler by dipping, brushing or spraying. Then follow, when dry, with applications of sealer and lacquer. A double-head coat of sealer followed by a double-head coat of high-solids lacquer should produce an excellent finish.—F. R. BOYNTON.

Folder on Mixing Operations

The Eclipse Air Brush Co., Inc., Pneumix Division, Newark, N. J., has just issued a 6-page illustrated data folder on the performance of its Pneumix air-motored agitators in laboratories and industrial plants. Copies are free on request.

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Finishing Red Gum

I would appreciate any information or suggestion you may have on the proper method of finishing the walls of a study room which have been paneled in figured red gum. I believe I would like the wood to have a natural appearance with a satin finish.—C. D. E.

Gumwood has been used a great many years for fine cabinet construction and furniture. For a long time it was unknown by its rightful name—American Gumwood—but was called "satin walnut," "hazelwood," etc. In the hands of skillful finishers it was made to resemble other woods so closely that an expert could hardly distinguish the difference. In Europe, and also in this country, it has been used under different names and has been recognized for its good qualities. Today it is known as red gum, sap gum and sweet gum, and enjoys extensive use for furniture, building trim, cabinet work and other purposes.

Gumwood is a very close-grain, close-knit wood of fine texture. It is commonly called a soft wood, but in reality is designated a hardwood by its manufacturers. It is harder than white pine, but not as hard as maple, oak or birch, so it may well be called a medium hardwood.

This wood can be purchased either plain or quarter-sawed. The formation of the grain seems to obey no laws; it apparently runs rampant throughout the logs, as the logs produce boards of diversified grain and texture. As to color, the sapwood makes a rather light colored wood with

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occasional dark brown streaks. The heartwood produces boards of medium light brown with a reddish tinge.

Lumber from the sapwood is called sap gum and the lumber from the heartwood is called red gum. Red gumwood is graded to supply plain or figured lumber and veneers. For fine panels and furniture the veneers can be matched to pattern to produce figured wood that is similar to Circassian walnut. The plain sawed gumwood, finished natural or with a very light brown stain, is much appreciated for interior wood trim because it produces walls of a soft subdued quality which furnish a rich background for various decorative effects. The quarter-sawed plain gumwood, not selected for decorative figure, is much used for the same purpose.

Circassian Walnut—This finish on gumwood is, in my estimation, the most beautiful. If the wood is expertly selected for grain figure and finished properly it makes a product that, even to an expert, is hard to distinguish from the real Circassian walnut. The first step in finishing is to see that the wood is properly stained. A non-grain-raising or oil stain may be used. This is assuming that the wood is thoroughly sanded before the staining operation.

If the non-grain-raising stain is used, I have found that it is wise to use a filling operation. To 3-qts. of benzine add 1-qt. of linseed oil and 3-lbs. of filler tinted to match the stain. Allow the filler plenty of time to dry; follow with a sealer coat; when this is dry, sand the surface again. It is now ready for the finishing coats. Flat or gloss coatings may be applied. If a flat lacquered surface is desired, the finish may be steel-wooled and waxed to produce a smoother surface.

For the oil stain, a sealer coat is applied and sanded . . . . in preference to the filler coat.

Natural Finish—This finish may be applied without the use of stains, but a better looking finish is obtained if the sap wood is treated or "toned" to match the heart wood. Materials for this purpose can be obtained from manufacturers of wood finishing materials, although in an emergency you can use a weak solution of chloride of iron or sulphate of iron. Dissolve this chemical in water and brush on the sap wood and let it dry; sand the raised grain; follow with the filling operation, this time using natural filler tinted slightly with raw sienna.

This finish looks better in the

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dull or satin sheen. Flat lacquer or shellac may be used, followed by the steelwool and waxing operations. Flat varnish is also used to advantage in the natural finish. The dead flats harmonize particularly with any color scheme.

For a varnish finish that is to be brushed on, a coat of shellac is put on over the filler coat, sanded thoroughly when dry, and followed by two coats of flat varnish. When the varnish is dry it may be gone over with paraffine oil and pumice stone to give it the deep low luster. Later, when the oil has dried, it may be waxed to resist moisture and humidity.—F. R. BOYNTON.

Letters From I. F. Readers

(Continued from page 8)

issue, pages 10 to 14 inclusive. A copy is being sent you.—ED.

Fire!

In your January 1939 issue, page 90, under the heading "Fire Extinguishers Worked," a statement is made that the National Fire Protection Assn. has recently announced that fire extinguishers and other first-aid fire appliances put out 75 to 90% of all fires.

I have never seen such a statement in print before, and immediately in my own mind questioned the accuracy of it, and also wrote to the National Fire Protection Association to verify it.

I am in receipt of a letter from the Technical Secretary of the National Fire Protection Assn., under date of January 27, stating that no statement of this character originated in their office. They state they have no available statistical method of determining the exact percentage, although they realize that a very considerable portion of all fires are put out by first-aid equipment of one kind or another.

I believe the over-zealousness of fire extinguisher manufacturers has caused you to make this assertion, which is misleading, and I suggest

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you check into it with the source from which you secured the information and make proper correction, as this may give an unfair viewpoint of the actual situation.

In the instance of automatic sprinkler installations, the publications of the National Fire Protection Assn. very definitely show that in buildings equipped with sprinklers, about 96% of all fires are satisfactorily extinguished through the action of the automatic sprinkler system.—Central Automatic Sprinkler Co.

The news item referred to is an exact copy of Bulletin FP-168, dated Nov. 26, 1938, and issued from the office of the National Fire Protection Assn., 60 Batterymarch St., Boston, Mass.—ED.

Sanding Sealer

We are wondering if there is any equipment for sanding lacquer sealer — equipment suitable for both flat and molding surfaces? Please advise. —P. L. & S. (Display Tables and Counters).

Bake Finishing Equipment

Since you are in position to ably inform one on paints and painting equipment, will you kindly assist me in obtaining the following data? In the latter part of March, this year, I intend to visit the mainland to gather knowledge about the proper procedure in baking automobile finishes and the equipment needed. I wish to know where, if any, such equipment is located and in use on the Pacific Coast, and by whom installed. If possible I would like complete information on a baking unit, with a heating system full of globes or heating lamps. My preference is the coil or pipe line type.—M. P. S., Honolulu, T. H.

Several automobile finishing and bake finishing installations are to be found in Los Angeles, Calif.—ED.

"Colofuse"?

One of our members is interested in locating the manufacturer of an enamel or finishing lacquer put out under the trade name "Colofuse." We have not been able to identify the makers. If you can help us, we shall appreciate your advice.—N. A. of Purchasing Agents.

We do not find this name in any of our files. Can some reader tell us who makes the material?—ED.

Stain Remover

Kindly send us the name of a concern that manufactures stain remover, as mentioned in INDUSTRIAL FINISHING. We wish to save the expense of sanding out all of the old stain, after removing old finish, preparatory to refinishing.—S. R. Co.

Will you please furnish the name and address of the firm that manufactures stain remover, mentioned on page 7 of December issue of INDUSTRIAL FINISHING?—C. E.

Names of manufacturers have been given. These include manufacturers of bleaching compounds and solutions.—ED.

Mother of Pearl

We are interested in knowing more about a new material in lacquer, called "Nacre." It gives a mother-of-pearl glow, and can be printed on textiles. If you have full details of this product, we should be glad to have them.—G. S. Inc.

We have no information on this "Nacre," but are submitting names of manufacturers of pearl essence lacquers.—ED.

Radio Cabinet Articles

Will you please mail, if possible, the series of five articles on "Finishing Radio Cabinets," as published in October, November and December, 1936, and January and February,

1937 issues of INDUSTRIAL FINISHING? —M. Furn. Mfg. Co.

This series of articles was so much in demand that our supply of copies has been exhausted.—ED.

Pearl Essence

We ask you to let us know the names of some American manufacturers of pearl essence which we are using in the manufacture of cellulose lacquers.—A. N. & S., Malmo, Sweden.

Name of firms have been supplied. —ED.

New Detroit Headquarters for Binks Mfg. Co.

Binks Mfg. Co. of Chicago, Ill., announces that its Detroit headquarters have been moved into larger space, the new address being 105 E. Baltimore Ave., Detroit, Mich. Space in the new location will permit of giving working demonstrations of the company's dynaprecipitor spray booths, spray guns of all types, mixing equipment and pressure tanks, sound-deadening equipment, etc.

The former office at 2830 E. Grand Blvd. has been taken over by the company's water cooling and water nozzle division, under the direction of Barton D. Wood.

Design of Exhaust Systems

A new illustrated book that tells engineers how to design and layout complete exhaust systems has been published by The Industrial Press, 148 Lafayette St., New York, N. Y. It contains 220 pages 6½x8½-in. and is bound between stiff blue cloth covers lettered in silver. The contents are divided into 10 chapters, some of these being hood forms, air flow through hoods, pipe resistance, piping design, dust separators, low pressure conveyors, centrifugal exhaust fans, structural details and field measurements.

The title is "Design of Industrial Exhaust Systems"; the author, John L. Alden, member of ASME; the price $3.00.

High Temperature Lacquers

An interesting and informative booklet about high temperature lacquers (a new trend in nitrocellulose coatings) has been copyrighted and published by The Sharples Solvents Corp., 23rd and Westmoreland Sts., Philadelphia, Pa.

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EDITORIAL

Butchered Finishes

Do you admire furniture finished in such a way that it appears old, worn or scared by long hard service? We are not expressing our opinion of it but we are strongly impressed by a letter we received from an authority on wood finishes. Perhaps what he says is representative of what many others have in mind. We quote part of his letter:

"Having just returned from an extensive trip and taken particular note of everything having to do with furniture and furniture finishes, I have naturally arrived at some definite conclusions. As you know, any number of individuals may look at the same thing and each will see it in a different light or have a different opinion of it. That, of course, accounts for the extremely wide range of furniture styles and finishes which may be seen even in the finest stores.

"Personally, it seems sort of a pity to me that many otherwise beautiful pieces of furniture, properly styled and beautifully finished, should be deliberately chopped, hacked, scraped, scratched, burned or otherwise so-called 'distressed' to make them look as though they had been through an earthquake or flood—or as though they had withstood the attack of millions of termites.

"Still other 'designers of finish' see fit to 'ape' repulsive fading or discoloration, as might be found on some old pieces of furniture which were not finished properly originally and which have, since aging a few years, taken on an appearance representing a cross between a crackled, checked, cracked or broken-down finish subjected to a few hot and cold cycles.

"In other words, the very features which would automatically reject a good finish, are sought after by some manufacturers who seem to be doing more to encourage 'outdoor' life and discourage the ordeal of living in the home with atrocious furniture. Confidentially, it would almost seem that their efforts along these lines are meeting with some success."

Our only comment is that, so far as we have noticed, no other utility merchandise is finished to make it appear old or worn. Rather it is finished to give the

surfaces a bright new rich appearance like Nature's fresh flowers and fruits. Contrast this with the appearance of an article that might be compared with a withered flower or bit of fruit that has lost its freshness.

California Furniture Finishes

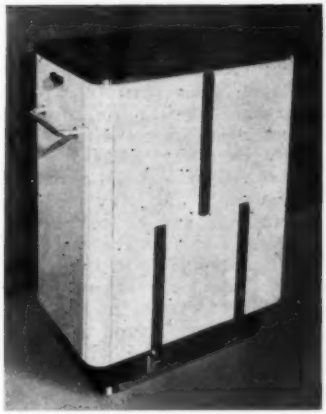
Commenting on finishes of new furniture exhibited at the Los Angeles Furniture Mart during the January show, Kathryn Erickson, of the L.A.F.M., says:

"While the new Modern was the one style movement to receive the greatest attention, choice was not confined alone to Swedish Modern. Southern California designers used this style of furniture only basically and developed several versions of Modern by applying various decorative elements, and changing the finish to give additional warmth to the furniture. Rose beige, rose quartz and harvest finishes were prevalent in this category, while the natural, hand-rubbed and bleached finishes were also shown."

Automatic Finishing

To secure large production at low unit cost and to insure absolute uniformity of the finish coating, many concerns are turning to completely mechanized apparatus for preparing surfaces for the finish, applying the finish and drying the finish. On certain classes of products or parts this work can be performed automatically—or semi-automatically. Manual labor is used only to set up and maintain the machine,

MODERN CABINET DESIGN



An example in modern design for service cabinets, styled by Glenn W. Tammen of Designers for Industry, Inc., Chicago, Ill. It is a dental operating cabinet—a portable revolving cabinet with two working sides.

From a design standpoint, its simple lines are in complete harmony with the general adoption by the profession of modern, smartly styled equipment, plus enhanced hygiene. Each end has a drop door medicine cabinet. It is a time-saver and a step-saver for the dentist, requires little space, is easily moved and can be revolved in a 34½-in. circle, being released from pedestal by foot lever. Another advantage lies in the large working space made available by the 40-in.-high molded rubber top which is 30-in. wide by 19½-in. deep. The cabinet has 22 wood-steel silent operating drawers and 50 glass trays, four of the drawers being fitted with white, corrugated rubber mats. Door pulls are of solid molded catalin, selected because of its acid-resisting, non-chipping qualities. Cabinet comes in mahogany finish or in any of several colors. Cabinets of this design are now included in the line manufactured by the American Cabinet Co., Two Rivers, Wisc.

supply it with work and take away the finished output.

Machines are generally designed and built especially for each concern that elects to employ automatic equipment for this kind of work. For example, to cite a typical case, one of our correspondents, a consulting industrial engineer, writes:

"I have just finished another machine for automatic synthetic lacquering and drying 50,000 units per day of compact and cigarette cases. The machine is 4-ft. wide and 26-ft. long . . . . it is the last word; does a fine job. If you ever come to New York, I would like for you to visit the plant; I will be glad to accompany you."

Of course this is just one such machine. Scores of others of various makes are in operation in industrial establishments in different parts of the country. Each machine represents a considerable investment, but it pays for itself where it is employed efficiently on quantity production.

Use of Bonderizing Extended for 1939

Every indication points to the extended use of Bonderizing during this year, if the many new installations are any criterion. This is especially true for automobile bodies, as several additional body builders are now tooled up to use this process for their 1939 production.

The phenomenal increase in the use of this treatment to provide adhesion for paint and rust resistance in the automotive industry is shown by a recent month's production figures which show that more than 90% of the cars made carried Bonderizing on fenders and other similarly exposed parts, while nearly 50% of the bodies were Bonderized.

The use of all-steel body construction now makes it possible to accomplish all the cleaning, rinsing and Bonderizing on a continuous conveyor line by spraying the solutions on the bodies as they pass a series of standpipes, the whole equipment being enclosed in a steel housing. The success of a few pioneering producers with Bonderizing, during the past few years, is responsible for its increased acceptance and the greater number of installations to be used on 1939 production.

Its adaptability and efficiency leads to new uses in new fields. Recently it has found its way into the steel window industry. In 1939, this added protection against rust and finish failure will be offered by most of the leaders in this important industry. This has been made possible by more efficient and economical methods of application, whereby the cleaning, priming and the baking of one shop coat of primer is accomplished on a continuous conveyor line.

Are your liquid mixing or agitating jobs being done in the most efficient and economical way? Is there perhaps a man with a paddle wasting his time, doing a mere ¼-hp. motor's work and giving you inferior and haphazard results in the bargain? A portable electric mixer will save time, labor, power, materials (and tempers) in practically every industry where finishing materials must be mixed thoroughly and quickly.

With recent improvements, this rust-proofing treatment can now be accomplished by either immersion or spray application, with lower temperatures for the solution and at reduced time for processing.

Controlled Finishing— An Exact Science

One of the laboratory men connected with a concern whose products are known and used throughout the world calls attention to present and future trends in finishing information in these two significant paragraphs.

"It has been my observation that the application of organic finishes is becoming more an exact science and less rule of thumb. At the same time, the so-called 'practical' finishing foreman is being replaced by technically trained men, and the demand for published articles is tending toward the informative rather than the descriptive.

Chair and part of buffet in "Santa Vera."

"We have been doing some interesting work in our finishing departments on viscosity control, sprayer technique, oven practice and similar fundamental subjects. It is possible that the readers of INDUSTRIAL FINISHING would be interested in the practical aspects of finishing control."

We are happy to announce that this engineer has promised to write a number of articles for INDUSTRIAL FINISHING magazine. His company's products carry durable and decorative finishes that are subjected to severe tests in actual service, and his articles will reveal many interesting facts about how those finishes and others of similar character are tested, applied and conditioned on clean metal surfaces.

Maas & Waldstein Co. Appoints New England Representative

Maas & Waldstein Co., makers of industrial finishes, Newark, N. J., announce the appointment of Harlan M. Gale as a sales representative for the New England territory. Mr. Gale, formerly with the Cleveland Varnish Co., and the Glidden Co., is well known in New England and has had wide experience in selling, servicing, and demonstrating finishing materials of all kinds.

Oakite Products for 30 Years

Commemorating three decades of service to industry as originators and producers of industrial cleaning methods and materials, Oakite Products, Inc., 22 Thames St., New York, N. Y., has just released a special issue of its house organ, Oakite News Service — 20 pages 6x9-in., bound between heavy paper covers printed in blue and aluminum.

This special issue gives an interesting, historical review of the development of specialized cleaning methods and materials, and how they have contributed in helping American industry speed production and keep manufacturing costs low. It includes, too, a recital of the trends industrial cleaning research will fol-

low in the coming years. Free copies are available upon request.

Marking of the company's 30th anniversary will be appropriately climaxed a few months hence, when an attractive, 2-color brochure will be issued, dramatically presenting in pictorial form the economic contribution made by many different industries to the nation's progress.

Milburn Appoints Representative for Detroit Area

The Alexander Milburn Co., Baltimore, Md., manufacturer of spray finishing equipment and cutting and welding apparatus, announces the appointment of Frank P. Snyder as sales representative in Detroit. Mr. Snyder was formerly sales engineer for the De Vilbiss Co., and has wide experience in the design, sales and installation of finishing equipment.

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

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With established following, wants to make commission connection with a manufacturer of competitive furniture finishes for the Southwest. In answering please give rate of commission and best delivered prices on Flat Varnish, Sealer and Filler, and if you have worked the Southwest before. Address IF-731, care Industrial Finishing.

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Overhead Conveyor Book

A new picture book of ideas for handling things mechanically by overhead conveyors has been published by Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill. The book con-

This conveyor picture book of ideas and information is free. Send for it today.

tains 20 pages 8½x11-in., and shows illustrations of conveyors in service in many types of manufacturing establishments, including metal cleaning and finishing departments.

Overhead conveyors make ceilings pay dividends, by handling products overhead, thus saving floor space, avoiding congestion and permitting economical straightline production without costly rebuilding.

Any reader desiring a copy of this book can get one by addressing the nearest Link-Belt office and asking for Book No. 1630.

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